

## TITLE OF THE INVENTION

### REFRIGERATOR WITH DOOR HANDLE

## CROSS-REFERENCE TO RELATED APPLICATION

5 This application claims the benefit of Korean Patent Application No. 2004-21492, filed on March 30, 2004 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

10 The present invention relates to a refrigerator, and, more particularly, to a refrigerator with door handles, which include buffer members inserted for providing a good tactile sensation when gripping the handles for opening or closing doors of the refrigerator, and deviating prevention members for preventing the buffer members from deviating.

### 2. Description of the Related Art

15 Generally, a refrigerator includes a body defined with a storage chamber for storing food at low temperature, a door hinged, at one side thereof, to a front end of the body to open or close the storage chamber, and a door handle for gripping the door when opening or closing the door.

20 As an example of a conventional refrigerator, Japanese Laid-open Patent Application No. Heisei 7-218103 discloses a large-size refrigerator with a door handle structure. The refrigerator includes two storage chambers respectively provided, in a

partitioned state, at both sides of the refrigerator, and two doors respectively provided at the front of the storage chambers such that the doors may be opened in accordance with hinge movements thereof in opposite directions.

5 The refrigerator disclosed in the application is provided with door handles at ends of respective doors facing each other such that a space is narrowly defined between the ends (specifically, the ends at respective free ends) of the doors facing each other in order to provide an excellent appearance. Each of the door handles comprises a flat plate-shaped fixing portion fixed to the free end of the door and vertically elongated corresponding to the height of the door, and a grip portion extending  
10 toward the front of the door from the fixing portion by a predetermined length and then bent in the direction of the center of rotation of the door to extend by a predetermined length. Further, the door handle is configured such that it may be mounted at the end of the door after being manufactured by typical extrusion molding of a metallic material.

15 However, although the door handle of the conventional large-size refrigerator can provide an elegant front appearance for the refrigerator, since the door handle is manufactured by the extrusion molding of the metallic material, there occur problems that when the user grips the grip portion to open or close the door, the user may feel tactile discomfort due to coldness of the door handle made of the metal, and in that hardness of the material of the door handle may cause the user's fingernails to break.

## 20 SUMMARY OF THE INVENTION

Therefore, an aspect of the invention is to provide a refrigerator provided with door handles, which includes a member for ensuring safety in use and good tactile sensation when opening or closing doors, and a structure for preventing the member from being deviated.

25 In accordance with one aspect, the present invention provides a refrigerator,

comprising: doors for opening or closing storage chambers; door handles respectively provided on the doors; buffer members of an elastic material respectively provided for the door handles to provide good tactile sensations when gripping the door handles; and deviating prevention members for preventing the buffer members from being deviated from the door handles.

Each of the door handle may comprise: a fixing portion fixed to a free end of the door; a front extension, which extend in the front direction of the door from the fixing portion; a side extension, which is bent to extend from an end of the front extension to a center of rotation of the door; and an insertion groove formed on an inner surface of the side extension for inserting the buffer member and the deviating prevention member.

The door handles and the insertion grooves may be vertically elongated along the lengthwise direction of the door. The buffer members may be vertically elongated along the lengthwise direction of the doors, respectively, and the deviating prevention members are provided to support one or more ends of opposite ends of the buffer members.

The buffer members may be formed with uneven portions, for preventing slippage on an outer surface thereof, to be gripped by the user, respectively.

The deviating prevention members may be respectively provided with fixing protrusions for fixing the deviating prevention members to the insertion grooves, and the side extension members may be respectively formed with fixing grooves to be inserted by the fixing protrusions, respectively.

Each deviating prevention member may be slidably supported, at opposite sides thereof, in the insertion groove, and provided, at a center thereof, with an elastic deformation portion, which deforms such that the fixing protrusion can be varied vertically.

Each deviating prevention member may be provided with an uneven portion

such that the deviating prevention member may have the same outer surface as that of the uneven portion of the buffer member.

## BRIEF DESCRIPTION OF THE DRAWINGS

5 The above aspects, other features and advantages of the present invention will become more apparent after reading the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is a perspective view of an appearance of a refrigerator according to a preferred embodiment of the present invention;

10 FIG. 2 is an exploded perspective view showing a door and a door handle of the refrigerator according to the preferred embodiment of the present invention;

FIG. 3 is an exploded perspective view of the door handle of the refrigerator according to the preferred embodiment of the present invention; and

15 FIGS. 4 and 5 are cross-sectional views illustrating a mounted state of a deviation prevention member, taken along line IV-IV of FIG. 3, according to the present invention, respectively.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An illustrative, non-limiting embodiment of the present invention will now be described in detail with reference to the accompanying drawings.

20 As shown in FIG. 1, a refrigerator according to the present invention includes: two storage chambers 11 and 12 respectively provided, in a partitioned state, at both sides of the refrigerator; two doors 13 and 14 respectively hinged, at each side thereof, to front ends of the storage chambers 11 and 12 such that respective storage chambers 11 and 12 may be independently opened or closed; and door handles 20 respectively provided for each end at free ends of respective doors 13 and 14 such that the user

may easily open or close the doors 13 and 14.

As shown in FIG. 2, each of the door handles 20 and 30 is formed through extrusion molding of a metallic material, such as aluminum, and includes a flat plate-shaped fixing portion 21 having a narrow width to entirely cover the free end of the door 13 and having a vertical length corresponding to the height of the door 13, and a grip portion 29 extending from an end of the fixing portion 21 to the front of the door 13 such that the user may easily grip the grip portion. Like the fixing portion 21, the grip portion 29 also has a vertical length corresponding to the height of the door 13.

The fixing portion 21 is provided with a front combining protrusion 22 and a rear combining protrusion 23 respectively extending toward the door 13 such that some portion of the front and rear faces of the door 13 is covered by a predetermined width, such that opposite sides of the free end of the door 13 are combined with the protrusions 21 and 23, respectively. Further, the fixing portion 21 is formed therethrough with a thread hole 25 to be screwed by a fixing screw 26 in order to mount the fixing portion 21 to the door 13. The front combining protrusion 22 is integrally provided, at an inner surface thereof, with a screw portion 24 to which a fixing screw 27 is fastened when a cover for covering upper and lower ends of the door 13 is mounted on the door. The screw portion 24 has an arcuate cross-sectional shape. A secure combination of the fixing portion 21 and the door 13 is attributed to the structure of the screw portion and the thread hole to be fastened by the screws 26 and 27, respectively, after secure attachment of the fixing portion 21 to the door 13.

The grip portion 29 extending from the fixing portion 21 comprises a front extension 29a, which extends in the front direction of the door 13 by a predetermined length with its outer surface being in a coplanar state with the fixing portion 21, and a side extension 29b, which is bent to extend from the end of the front extension 29a to a center of rotation of the door 13 by a predetermined length. These structures enable the user to grip the grip portion 29 of the door 13 by grasping it with their hand when

opening or closing the door 13.

Inside the side extension 29b of the grip portion 29, there are provided a buffer member 30 of an elastic material to provide a safety in use together with good tactile sensations when opening or closing the door 13, and with a deviating prevention member 40 manufactured by injecting a plastic resin for preventing the buffer member 30 from being deviated from the door handles. The side extension 29b is formed with an insertion groove 29c at an inner surface thereof for inserting the buffer member 30 and the deviating prevention member 40, thereby supporting opposite sides thereof.

The buffer member 30 is vertically elongated along the side extension 29b, and made of an elastic material such as rubber, silicone, soft plastic or the like. The buffer member 30 is formed with an uneven portion 31 at the outer surface thereof for preventing slippage. The buffer member 30 is press-fitted into the insertion groove 29c by elastic deformation, and bonded to the side extension portion 29b with an adhesive applied to a portion contacting the inner surface of the side extension 29b.

In general, if the refrigerator is used for long time, due to a weakened adhesive force of the buffer member 30, the buffer member 30 can slide down or can be pushed up along the insertion groove 29c resulting in deviation from the insertion groove 29c. Thus, in order to prevent the deviation of the buffer member 30, the deviating prevention member 40 is fixed to the insertion groove 29c to support opposite ends of the buffer member 30. The deviating prevention member 40 is slidably supported, at opposite ends thereof, in the insertion groove 29c such that the deviating prevention member 40 is detachably provided to the insertion groove 29c. Like the uneven portion of the buffer member 30, the deviating prevention member 40 is formed with an uneven portion 41 on the outer surface thereof and with a fixing protrusion 42 protruded toward the side extension 29b on the inner surface thereof. The side extension 29b is provided with a fixing groove 29d such that when the deviating prevention member 40 is inserted there into, the fixing protrusion 42 is received in the fixing groove 29d, thereby fixing the

deviating prevention member 40. The deviating prevention member 40 is provided at the center thereof with an elastic deformation portion 43 divided by two vertically elongated grooves thereon. The fixing protrusion 42 is provided on the rear side of the elastic deformation portion 43, and as shown in FIGS. 4 and 5, the elastic deformation portion 43 is deformed such that the fixing protrusion 42 can be varied vertically when fitting the deviation prevention member 40 in the insertion groove 29c, thereby providing easy mounting.

The buffer member 30 may provide good tactile sensation to the hands resulting from a predetermined amount of elastic deformation thereof, and also prevents the user from feeling the coldness of the metal when gripping the door handle to open or close the door 13. In addition, the buffer member 30 may prevent user's fingernails from breaking. The deviation prevention member 40 may prevent the buffer member 30 from sliding down or being pushed up in the insertion groove due to the weakened adhesive force of the buffer member 30, so that the buffer member 30 is not deviated from insertion groove 29c.

As apparent from the above description, in accordance with the present invention, there are provided advantageous effects that the buffer members of the elastic material in the door handles of the refrigerator provide good tactile sensations and buffering functions, thereby preventing the user's fingernails from breaking even though an excessive force is applied to the door handles when opening or closing the doors.

Further, there is also provided an advantageous effect that the deviation prevention members prevent the buffer members from being deviated from the insertion grooves even though the refrigerator is used for long time.

Although the preferred embodiments of the invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of

the invention as disclosed in the accompanying claims.